(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 468 713 A3

(12) EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
27.10.2004 Bulletin 2004/44

(43) Date of publication A2:
20.10.2004 Bulletin 2004/43

(21) Application number: **04076782.4**

(22) Date of filing: **22.06.1998**

(51) Int Cl.[7]: **B01D 21/26**, B04B 11/04, A61M 1/38, A61M 1/36

(84) Designated Contracting States:
BE DE ES FR GB IT

(30) Priority: **01.07.1997 US 886732**

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:
98930151.0 / 1 024 872

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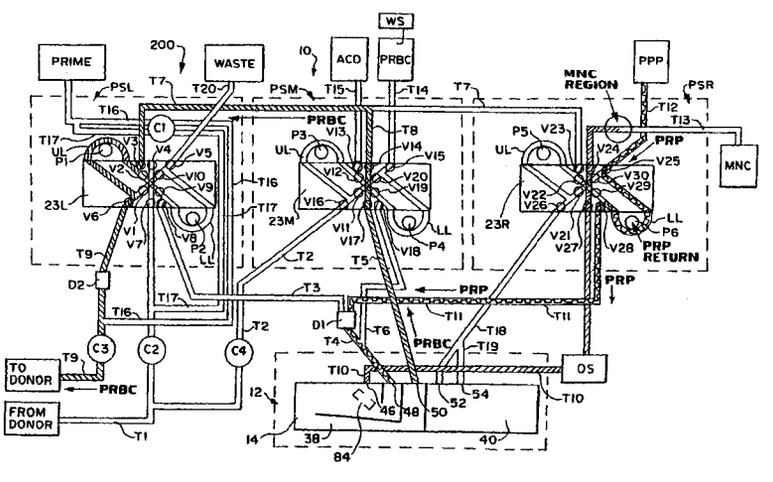
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(54) Systems and methods for collecting diluted mononuclear cells

(57) A blood separation system is described. The system comprises a chamber (12), a collection container, a pump (P1-P6) and a controller. The chamber is rotatable about a rotational axis and includes an inlet region where whole blood enters for separation into packed red blood cells, a plasma constituent and an interface carrying platelets and mononuclear cells between the packed red blood cells and the plasma constituent. The controller is operable to convey whole blood into the inlet region while removing packed red blood cells and the plasma constituent from the chamber and is also operable to recirculate a portion of platelet-rich plasma into the inlet region of the chamber. The controller also comprises an interface control unit that is operable (i) in a first condition to retain mononuclear cells in the chamber while enabling removal of platelet-rich plasma from the chamber in a path that bypasses the container; and (ii) in a second condition to enable removal of mononuclear cells from the chamber in a path that leads to the collection container. A method for collecting diluted mononuclear cells that uses the system is also described.

FIG. 25



EP 1 468 713 A3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 07 6782

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	WO 96/32199 A (COBE LAB) 17 October 1996 (1996-10-17) * page 2, line 10 - page 3, line 14 * * page 11, line 33 - page 12, line 21 * * page 11, line 33 - page 12, line 21 * * page 14, line 15 - page 15, line 33; figures *	1-12	B01D21/26 B04B11/04 A61M1/38 A61M1/36
A	US 3 655 123 A (JUDSON GEORGE T ET AL) 11 April 1972 (1972-04-11) * column 10, lines 24-71 *	1-12	
A,D	US 5 573 678 A (MIN KYUNGYOON ET AL) 12 November 1996 (1996-11-12) * the whole document *	1-12	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A61M
B01D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	23 August 2004	Persichini, C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

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Application Number
EP 04 07 6782

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☒ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

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LACK OF UNITY OF INVENTION SHEET B

Application Number
EP 04 07 6782

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-6

   Blood separation system and method for separating platelet-rich plasma and mononuclear cells from whole blood and recirculating a portion of the platelet-rich plasma

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2. claims: 7-12

   Blood separation system and method for separating platelet-poor plasma, platelet-rich plasma, and mononuclear cells from whole blood and using platelet-poor plasma for diluting the mononuclear cells

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 07 6782

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